ABSTRACT

A method and system for tracking a time division multiplexed synchronization signal in a satellite communication system is provided. The signal is provided as a series of frames with beacon signals time division multiplexed into at least one time slot of each frame. The beacon signal in each frame comprises a unique word sequence, which is the same in each frame, and a portion of a PN sequence. The entire PN sequence is distributed into a plurality of frames forming a superframe. Frequency variations of the incoming signal are tracked at the satellite terminal by correlating the PN sequence of the incoming signal against early and late locally generated versions of the PN sequence in a discriminate circuit. The output of the discriminate is provided to a delay locked loop circuit of at least third order. The output of the loop is used to adjust the frequency of the VCO, which clocks the A/D converter operating on the incoming signal. The product of the PN sequence of the incoming signal and an on-time locally generated version of the PN sequence is provided to an FFT circuit. The satellite terminal determines if it is locked onto the incoming signal based on the output of the FFT. If the satellite terminal is not locked, the terminal returns to an acquisition mode.